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OPERATIONAL FIRES

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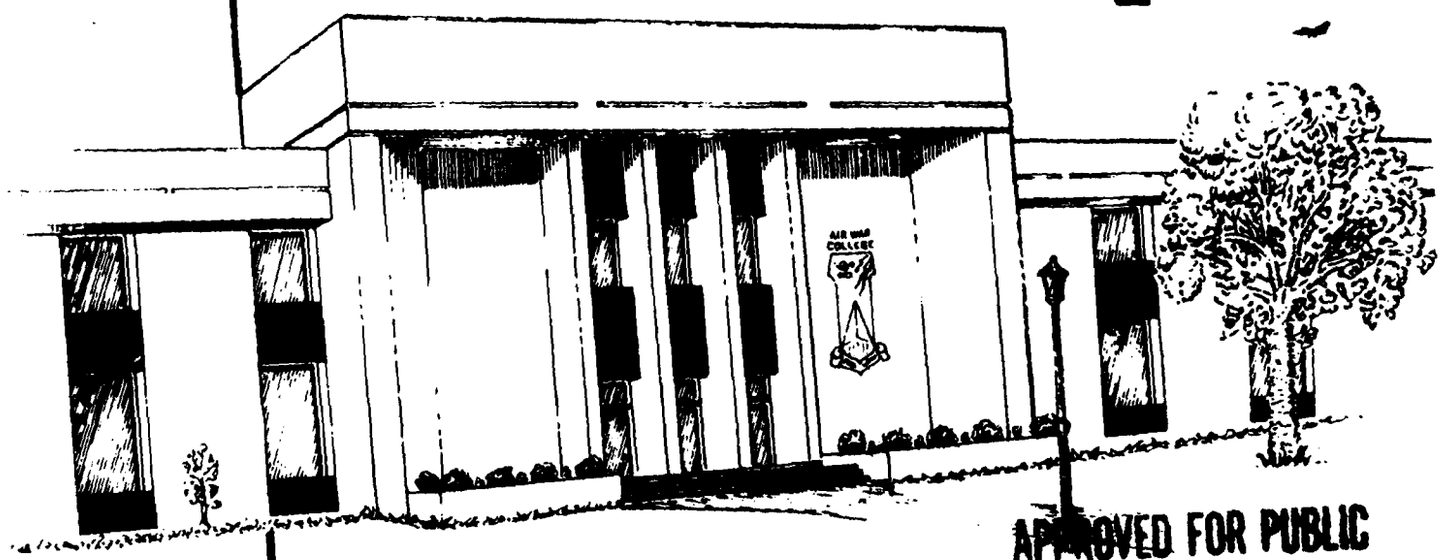

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OPERATIONAL FIRES

by
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A DEFENSE ANALYTICAL STUDY SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE CURRICULUM

REQUIREMENT

Advisor: Lieutenant Colonel Carlos Langston

MAXWELL AIR FORCE BASE, ALABAMA

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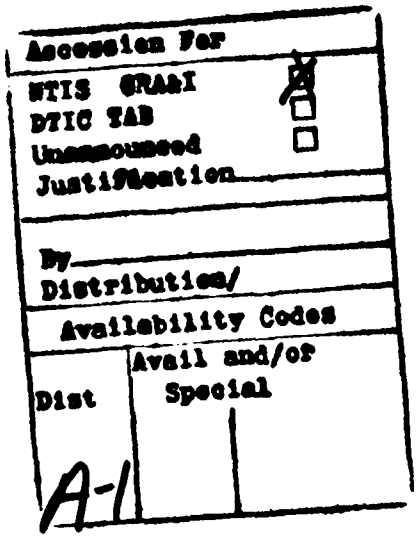

EXECUTIVE SUMMARY

TITLE: Operational Fires

AUTHOR: Ralph G. Reece, Lieutenant Colonel, USA

The publication of Field Manual (FM) 100-5, the United States Army's keystone manual for AirLand Battle doctrine, was a watershed in describing how our Army is to fight. It defines three levels of war--strategic, operational, and tactical--and describes how our forces will fight at the operational and tactical levels. While fire support at the tactical level is fairly well understood, there has been little analysis done of fires at the operational level of war. This paper reviews the current doctrinal literature on operational fires, and presents a concrete definition for the term. A historical examination of the US and Soviet use of operational fires.supports the developed definition.

The historical precedents show a US dependence in recent years on airpower to provide operational fires, and the resultant implementation of a Tactical Air Control System to plan, coordinate, and deliver these fires. Technological innovations such as more accurate, longer range tactical missiles, improved target acquisition systems, and new multirole aircraft create a requirement to reexamine the existing system. This analysis highlights the increased role of the ground commander in the delivery of operational fires and offers a recommendation to ensure better coordination between operational maneuver and fires.

BIOGRAPHICAL SKETCH

Lieutenant Colonel Ralph G. Reece (B.A.-Rice University, M.A.-University of Oklahoma) is a career Field Artillery officer with a continuing interest in fire support matters. He has been a fire support coordinator at various levels, been an instructor at the US Army Field Artillery School, and worked in the development of joint concepts at the Combined Arms Center, Ft. Leavenworth, KS. He has served in Vietnam, Korea, Germany, and the United States, and commanded a direct support, Field Artillery battalion in the 2d Armored Division. He is a 1981 graduate of the Army Command and General Staff College and a 1989 graduate of the US Air War College.

TABLE OF CONTENTS

CHAPTER		PAGE
	DISCLAIMER	ii
	EXECUTIVE SUMMARY	iii
	BIOGRAPHICAL SKETCH	iv
I	INTRODUCTION	1
II	DEFINITION OF TERMS	4
	Doctrinal Review	4
	A New Definition	10
III	HISTORICAL PRECEDENTS	12
	Normandy Campaign	14
	Belorussian Strategic Offensive	19
IV	US OPERATIONAL FIRES: THE PRESENT	27
	Army Organizations	27
	Corps	28
	Field Army	28
	Army Group	29
	Theater Army	30
	Fire Support	31
	Field Artillery	32
	Tactical Air	34
	Tactical Air Control System	37
	Summary	39
V	US OPERATIONAL FIRES: THE FUTURE	40
	The "Blurring" of CAS, BAI, and AI	42
	Summary	51
VI	CONCLUSIONS AND RECOMMENDATIONS	52
VII	SUMMARY	58
	APPENDIX:	
	1. Map of Belorussian Campaign	61
	2. Tactical Air Control System	62
	LIST OF REFERENCES	63
	GLOSSARY	68

CHAPTER I

INTRODUCTION

The US Army's Field Manual (FM) 100-5, Operations, is the keystone manual for AirLand Battle doctrine. (1:i) While LTC Don Holder, one of its authors, recognizes the importance of doctrinal additions like deep attack and maneuver-based tactics, he chose to highlight the reintroduction of the operational level of war as one of the "most important changes in our doctrine since World War II." (2:22) Judging by the amount of debate and professional writing on the subject, he is undoubtedly correct.

FM 100-5 defines operational art as "the employment of military forces to attain strategic goals in a theater of war or theater of operations through the design, organization, and conduct of campaigns and major operations." (1:10) LTC Holder points out that operational art, under various names, was studied in the US Army through the 1940's, but has been neglected since the end of the last World War. In 1982 when the term was being reintroduced into our professional lexicon, the last officers who had actually directed forces at the operational level were retiring from active duty. In a 1985 article Holder calls on military professionals to study the operational level of

war, to "catch up" on its fundamentals, and to become involved in developing the various details necessary to operate at this level. (2:14)

AirLand Battle is generally accepted as a shift in Army doctrine from attrition to maneuver warfare. While this is undoubtedly significant, the spotlight on the importance of operational maneuver has tended to leave the study of firepower in the shadows.(*) Firepower, however, does not equate to "attrition warfare"; it plays an important role in the maneuver warfare described in AirLand Battle and deserzves continued review. The concept of "operational fires" as they relate to maneuver was not lost on previous commanders, and we cannot afford to overlook the importance of these fires to the operational commander today. This paper analyzes firepower at the operational level of war in an attempt to identify issues that will affect how we plan, coordinate, and deliver fire in support of the operational commander's campaign plan.

An initial examination of existing doctrinal literature will define terms and set parameters for the analysis. This

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(*) Several articles have been written in recent military journals lamenting the attention paid to maneuver at the expense of firepower. For a detailed discussion see COL Robert H. Scales, "Drumbeat For Maneuver Could Muffle Firepower," Army, Dec 1986, pp 22-32; and COL "Galen", "In Matching Mobility and Firepower, The Marines Moved Out, The Army Moved Paper," Armed Forces Journal International, May 1986, pp 32-33.

survey will highlight an existing lack of specificity in the definition of terms, and a complementary lack of understanding of the true role of operational fires. To set the foundation for the remainder of the paper, I will offer a definition for operational fires that synthesizes what has been written in various doctrinal manuals.

Then, using several historical examples from World War II, I will examine the applicability of the term "operational fires" from both a US and Soviet perspective. This quick historical review will illustrate the validity of operational fires as a concept. The evidence presented will support the definition developed earlier in the paper, and will set the stage for a discussion of how we are organized to deliver operational fires today.

The promulgation of AirLand Battle doctrine and the ever growing increase in technological capabilities add a new dimension to the study of operational fires and bring into question who should be responsible for planning, targeting, and delivering these fires. Chapter V of this paper addresses problems with our present system of coordinating fires at the operational level and Chapter VI offers a suggestion for improving our efforts.

CHAPTER II

DEFINITION OF TERMS

A discussion of "operational fires" should begin by ensuring a clear understanding of the term. In July 1988 the US Army's Field Artillery school requested students attending Senior Service Colleges to research issues of current interest to the fire support community. Among the topics was a requirement to define "operational fires" and determine how they are to be used in AirLand Battle. (3:6)

It would appear that the Field Artillery School, the proponent for developing Army fire support doctrine, has not yet itself clearly come to grips with this issue. Have others? I'll begin by reviewing the doctrinal literature in print.

Doctrinal Review

The 1982 version of FM 100-5 substantially changed the US Army's overall view of war fighting. This initial version of AirLand Battle doctrine underwent four years of critical review before being reissued in 1986. The current edition is now the Army's recognized conceptual foundation for subordinate doctrine, force design, materiel acquisition, and individual and unit training. (4:18) It defines a three dimensional structure of modern warfare at the strategic, operational and tactical levels and describes

how our Army, in conjunction with the other services, is to fight battles, major operations, and campaigns at the two lower levels--tactical and operational.

To succeed at these levels the commander must apply "combat power." This is defined as "the ability to fight", and is the dynamic combination of four elements--maneuver, firepower, protection, and leadership--under various situations. (1:11) The authors discuss each of these elements in some detail and relate the use of each at the operational and tactical level.

Firepower, the subject of this paper, is defined in terms of what it <u>does</u>, rather than what it <u>is</u>. It "provides" destructive force to defeat the enemy's ability and will to fight. It "facilitates" maneuver by suppressing the enemy's fires and disrupting his movement. It "exploits" maneuver by neutralizing the enemy's forces. It may also "be used independently" of maneuver to destroy, delay, or disrupt uncommitted enemy forces. (1:12)

FM 100-5 goes further to specifically address fires at the operational level. Firepower "supports" operational maneuver by damaging the enemy, creating delays, complicating command and control, and degrading the enemy's artillery, air defense, and air support. Additionally, fires at the operational level can "disrupt" the movement, fire support, command and control, and sustainment of enemy

forces. (1:13) The authors obviously felt there was a role for firepower at this intermediate level of war.

FM 6-20, Fire Support in the AirLand Battle, written by the Field Artillery School in May 1988 codifies doctrine for fire support. In spite of the Field Artillery School's appeal for definition of "operational fires", this manual expands on the use of such fires. It states that AirLand Battle poses no revolutionary challenges for the fire support system. "Instead it reestablishes a requirement to increase the scope of fire support to an operational level that has not existed since the Second World War." (5:1-6) FM 6-20 goes on to state that the objective of fire support at the operational level is to destroy, neutralize, or suppress high-payoff targets affecting the outcome of a campaign or major operation. The manual gives specific examples of fires at the operational level--joint suppression of enemy air defense (J-SEAD), the joint attack of the second echelon (J-SAK), and the conduct of deep operations. It even identifies assets to be used, to include Air Force support providing air interdiction (AI) and battlefield air interdiction (BAI), and field artillery providing long-range rocket and missile fires. (5:1-6)

FM 100-5 and FM 6-20 certainly address the subject of "operational fires", but neither use the specific term or clearly define the relationship between fire and maneuver at the operational level. The descriptions of what fires are

to accomplish at this level really varies little from what is expected at the tactical level. The description in FM 100-5 has similarity to the Air Force definition for interdiction, and FM 6-20 focuses on a requirement for depth. Are there really no other differences?

In September 1987 doctrine writers at Fort Leavenworth prepared a draft manual (FM 100-6, Large Unit Operations) that furnished a framework for units "...prosecuting the operational level of war." (6:i) Though not in final form, this document does use the term "operational fires" and describes general tasks for them. It states:

> Operational Fires
>
> Fires are considered operational when their application constitutes a decisive impact on the conduct of a major operation. Operational fires are thus distinguished from tactical fire support in both the way they are planned and the impact they are intended to achieve. (6:3-13)

The manual also lays out three general tasks for operational fires:

> o Facilitating maneuver to operational depths by the creation of an exploitable gap in the tactical defense;
> o Isolating the battlefield by the interdiction of uncommitted enemy forces and sustaining support; and
> o Destroying critical functions and facilities having operational significance. (6:3-14)

These tasks support the more general definition of firepower espoused in FM 100-5, and provide the reader with

a clearer understanding of what operational fires are to accomplish. They are each distinctive functions of fire and each is keyed to the operational level.

The authors of the draft manual provide three distinctions between operational and tactical fires.(6:3-17) The first relates to the level of war itself. Because operational fires support campaigns at theater level, the integration of fires with maneuver occurs at a higher level than tactical fires. It can be argued, and has been, that operational art is not tied to a given level of command, i.e. a corps sometimes fights at the tactical level and sometimes campaigns at the operational level. (7:66) In a fully developed theater an echelon above corps will normally conduct campaigns, but in today's US Army those echelons do not exist. No matter what command structure is present, the principle remains the same: the planning and coordination of operations in a theater should occur at a higher level than the tactical planning for fighting battles. When fires are planned at this higher level, they can be viewed as having a greater role than at the tactical level. Fires are integrated with maneuver, rather than just supporting it. While they can be used to open gaps or suppress defenses, thus facilitating maneuver, they can also be employed against targets that are not directly related to maneuver. The second and third tasks listed above for operational fires would certainly have an affect on maneuver, but they

could be performed autonomously and have great operational value.

There is a second distinction. Operational fires are normally provided by assets other than those used to support tactical maneuver. In the past the US has used surface-to-surface rockets and the longer ranging field artillery cannons (240mm howitzers, and 155mm, 175mm, and 280mm guns) at the higher levels; i.e. corps artillery and above. While there have certainly been some exceptions, lighter, shorter range weapons have provided the direct support fires for tactical forces. Surface systems must have greater range at the operational level or the ability to maneuver quickly to continually stay in range to provide fires at operational depth. The longest range operational fires have been provided by air forces. But even here, the functions of Close Air Support (CAS) and Air Interdiction (AI) have been provided at different levels. While we'll see this in more detail later, CAS missions have been flown in support of front line tactical maneuver, while AI has been used at the higher operational level.

The third major difference between the two types of fires is the planning approach. Tactical fire plans are normally begun in support of maneuver at the lowest level. The plans move up fire support channels until finalized and are then sent to firing units. Conversely, operational fires are planned at the highest level in the theater. The

targets are designated and then usually passed down to agencies that actually deliver the fires. Exceptions to this approach can be found at either tactical or operational levels, but they are the exception rather than the rule.

A NEW DEFINITION

FM 100-5, FM 6-20, and the draft manual for large unit operations (FM 100-6, Coordinating Draft) all recognize the importance of firepower at the operational level, but none of them provide a comprehensive definition for operational fires. In order to conduct a valid analysis, a clear definition is still required. Since one is not available in the doctrinal literature, I have derived the following:

> "Operational Fires" are fires which have a decisive impact on a campaign or major operation. They are integrated with maneuver at the operational level and usually serve one or more of three purposes. They overwhelm the enemy at critical points facilitating operational maneuver; they interdict enemy forces that have not yet joined the tactical fight; or they destroy critical facilities or functions that will adversely affect the enemy's campaign plan.

This definition in no way contradicts the description of firepower in the capstone doctrinal manual, FM 100-5. Rather, it expands upon it. It adds specificity to the discussion in FM 6-20, and focuses the essence of the discussion in the draft manuscript of FM 100-6. The remainder of this paper will add credibility to this definition by relating it to historical uses of firepower in

major operations. It will then identify current and future issues surrounding operational fires, and provide some suggestions for writers of US Army and Air Force doctrine.

CHAPTER III

HISTORICAL PRECEDENTS

Operational fires are a relatively modern innovation. The genesis of operational art is generally linked to Napoleon's emphasis on "Grand Tactics." (8:32) The students of his campaigns, to include Jomini and Clausewitz, certainly recognized the lethality of fires, but weapons of that era were almost exclusively dependent on direct fire and were of short range. Fires were able to affect tactical maneuver, but they did not have the range to accomplish much at even the reduced operational distances of that time. The Industrial Revolution and resultant increased lethality, range, and accuracy of weapons continued to affect the conduct of war. The American Civil War was the beginning of an era that saw firepower gain complete domination over maneuver. The last year of the Civil War saw large scale siege operations around Richmond and Petersburg. In Europe, the trend was the same. The Franco-Prussian War concluded with a five-month siege of Paris, and the Russo-Turkish War of 1877 was devoid of maneuver. Even the Russo-Japanese War of 1905 which began with sweeping maneuver ended in trench warfare. (9:247) All of these were just precursors of World War I, which saw firepower reach its zenith.

World War I, however, provides no good examples of "operational fires" having a decisive impact. The War did not start as an artillery war. In fact doctrine on both sides stressed the importance of maneuver. With the exception of heavy German artillery developed to reduce Belgian frontier forts, most prewar emphasis was on lightweight, fast-firing, mobile artillery that could accompany and support fast-moving columns. The magazine-fed rifle and the machine gun forced the troops to ground and began the race to build fortified positions across Europe. It was only then that modern and heavy artillery began to dominate the battlefield. (10:1-2)

Massive amounts of fire were brought to bear to blast penetrations in trench and wire fortifications for frontal assaults or to open new flanks. The German attempt to rupture the lines at Verdun with over 1400 artillery pieces is one example of massive firepower being used to facilitate operational maneuver, but it failed. (11:113) Even the eventual use of artillery-delivered chemical weapons was ineffective. In fact, the First World War is marked by a lack of operational maneuver, particularly on the Western Front where the highest density of firepower was concentrated. (12:3)

The lack of integrated fire and maneuver at the operational level during World War I compels us to look to World War II for examples that have a current relevance.

Between the two wars technology provided vastly improved armor, aircraft, and communications that were to break the mastery firepower held over maneuver. First the Germans, then the Allies, would learn to integrate fires with operational maneuver to carry out wide-ranging campaigns across Europe, Africa, and Russia. Two of these campaigns--Operations Cobra and Bagration--are excellent examples of effective use of operational fires.

Normandy Campaign

25 July to 3 August 1944

Thirty days after the initial landings on Normandy the beachhead was secure, but the Allies were locked in a stalemate with stubborn German forces. General Bradley planned a breakthrough of the German lines to the west of St. Lo with an eventual breakout from the hedgerows of the Cotentin Peninsula. (13:88) Farther east the British Second Army was still attempting to capture Caen.

By 16 July 1944 the Americans had captured St. Lo and were ready to launch the breakout, Operation Cobra. Bradley selected the VII Corps under MG Lawton Collins to make the main attack with supporting flank attacks by the VIII and XIX Corps. To provide the concentration needed for breakout, the VII Corps front was reduced to only 7000 yards. Following the initial breakthrough by four divisions, the 1st Infantry and 2nd and 3rd Armored

Divisions were to conduct a passage of lines, and exploit to the south and then west into the Brittany Peninsula. (13:90)

The fire support provided was impressive. The Corps received 21 additional battalions of field artillery to supplement the existing organic fires. Additionally, the adjacent corps were instructed to position their artillery to support the breakthrough. In all, over 1000 guns were available to suppress enemy fires and destroy strongpoints. (13:88-89)

Carpet bombing, planned to fall at least 1450 yards in front of American troops, was provided by over 2900 aircraft from the Eighth and Ninth Air Forces. Over 700 fighter bombers in two waves were to attack shallow targets, while 1800 heavy bombers attacked targets to a depth of 2500 yards. Finally, 400 medium bombers were to attack deep targets 10 minutes after the troops began advancing. (11:21) This included the entire heavy bombardment assets of Eighth Air Force, the Ninth's medium bombers, and all of the Ninth's fighters. The VIII Fighter Command provided area cover. (14:232)

The attack was scheduled for 20 July, but was delayed five days because of bad weather. An abortive attempt to attack on the 24th led to bombing errors that killed or wounded 156 soldiers in the 30th Infantry Division. (15:401) On the 25th the attack took place and, though there were over 600 friendly casualties, the U.S. forces moved forward.

(15:401) By the 28th General Bradley ordered a full exploitation. (13:92) The Germans were numbed, disorganized, and falling to the rear. On 1 August, Third Army was activated under the command of George Patton and it, using the VIII and XV Corps, moved southward to widen the gap in the German lines and then westward into Brittany. (15:409)

General Collins had attached all of the light artillery received from First Army to the divisions, ensuring VII Corps kept control of 174 pieces of medium and heavy caliber. (13:92) The Corps Artillery was positioned well forward to provide the deeper fires, while division artilleries were used for close support and accompanied maneuver forces as they moved forward into the exploitation.

Operation Cobra marked a major improvement in close cooperation between ground and air forces. The Ninth Air Force's IX Tactical Air Command (TAC) provided the close support needed by penetrating elements of First Army. A combined First Army - IX TAC operations center provided the detailed coordination needed for over 9,000 close support sorties between 25 and 31 July. (16:129) Meanwhile, Ninth Air Force used its IX Bomber Command to interdict targets at operational depth, preventing the Germans from moving equipment or supplies forward to join the fight. As the official Ninth Air Force history describes it, "the enemy

was unable to use the rail system inside the Seine-Loire area for any large scale movement of troops...". (16:154)

The German defenders were devastated by the massive bombardment. General Bayerlein of the Panzer Lehr Division wrote:

> ...the planes kept coming...my front lines look like a moonscape and at least 70% of my personnel were out of action. All my front line tanks were knocked out...we could do nothing but retreat...a new SS Tank Battalion was dispatched to us with 60 tanks...they arrived with five. (12:22)

The artillery and air-delivered firepower obviously met two of the criteria of our definition for operational fires. They facilitated the operational maneuver as General Bradley's three divisions broke out of the beachhead. Also, as Bayerlein's quote shows, they interdicted forces which would have moved forward to reinforce defending tactical units.

As discussed in Chapter II there is a difference between tactical and operational fires. During Operation Cobra, fires were planned at the operational level (army group, army, numbered air force, and tactical air command) and in close conjunction with maneuver. Artillery assets were provided from army to corps and division, and separate roles were assigned to each. Reinforced division artilleries provided the tactical fire support, while corps artilleries, reinforced with First Army assets, provided

deeper operational fires. This scheme also allowed the lighter weight, more mobile division artilleries to accompany maneuver and provide continuous fire support during the breakthrough. The greatest weight of operational fire came from the air. During the initial penetration MG Elwood "Pete" Quesada's Ninth Air Force provided the close-in support with fighter bombers (primarily P-47's), while medium bombers from the IX Bombardment Division and heavy bombers from the Eighth Air Force struck at operational targets. After the breakout the Ninth Air Force retained control of its light and medium bombers and attacked interdiction targets at greater operational depth, while its subordinate IX TAC provided tactical close support to the ground force. (17:14)

Operation Cobra was a classic example of the employment of operational fires. The breakout and subsequent exploitation were definitely an operational maneuver designed to accomplish a strategic goal within the theater. (12:29) Without the fires provided by artillery and the Army Air Force there would have been no operational maneuver. The fires overwhelmed the enemy, allowing the exploitation to take place, and interdicted reinforcing units to prevent them from entering the tactical battlefield. Though not discussed here, it can be argued that the counter air effort that destroyed the Luftwaffe provided the third function of operational fires outlined in

our definition. These fires destroyed a critical combat function (i.e., German air support) that could have adversely affected the campaign.

Though this campaign is an excellent example of the role of operational fires, there are others. The Russians were students of the operational art long before it became popular in this country. An example from their Great Patriotic War against Nazi Germany will highlight similarities and differences in the way our definition of operational fires can be applied.

Belorussian Strategic Offensive

23 June to 29 August 1944

The Russian military has always placed great emphasis on effective artillery firepower. In 1924 the Red Army held a All-Union Artillery Conference at which Marshal Mikhail Tukhachevskii, the Russian military theorist who is considered the father of Soviet operational art, presented a paper on Maneuver and Artillery. Here he addressed the important role artillery firepower would play in facilitating maneuver. The conference contributed directly to the Army Reforms of 1924-1925, the 1927 Field Regulations and later the 1936 Regulations. (18:45) Marshal Vladimir Triandafillov, the originator of the "norms" that Soviet planners still use, espoused the requirement for huge quantities of artillery for breakthrough operations and

artillery available to accompany advancing troops. He went on to advocate "strategic artillery reserves" to give higher level commanders the capability to influence large scale maneuver. (18:46)

The work of men like Tukhachevskii and Triandafillov led to the publication of the Red Army's 1936 Field Regulations which called for close integration of fire and maneuver. These regulations assigned three key tasks to artillery--(1) provide preparation fires to allow maneuver to take place, (2) ensure field artillery has the capability to accompany long range tank attacks, and (3) "cover" the advance of maneuver forces over the entire depth of the offensive. (19:169) This emphasis on depth and the need to accompany maneuver forces with firepower would characterize operational movements in the great battles on the Eastern Front during World War II.

While the new 1936 Field Regulations called for heavy and well-coordinated artillery fire support, they did not overlook the newly developing air service as a provider of fires. In the first chapter the authors note:

> Maneuver and offensive operations by mechanized formations require air support. Air formations, as well as carrying out independent operations, act in close conjunction with all-arms formations at operational and tactical levels. They undertake measures against enemy columns, troop concentrations and support elements (ground attack aircraft and light bombers); bridges (bombers); and enemy aircraft and airfields (fighters, ground attack aircraft, and light

bombers). They also cover friendly forces and dispositions. (19:180)

As Marshal Tukhachevskii reviewed the new regulation he preached a combined arms philosophy that stressed maneuver rather than positional warfare. He saw the tank as a vehicle which would allow deep attacks into the enemy's rear area if provided with air support and massive amounts of artillery. This early proponent of deep attack recognized the growing complexity of coordinating these various arms, but saw it as necessary if offensive maneuver was to overcome the inherent advantages of defense. By combining fire with maneuver Tukhachevskii saw the ability to overcome the static defenses that had prevailed during World War I by increasing the combat power of his forces. As he said, "The growth and development in long range artillery and the progress achieved in aviation and armor make present day battle operations more complex, but they also make war more destructive." (20:74) Though Tukhachevskii was purged in June 1937, his writings on operational art, the deep attack, and the emphasis on artillery and air support at the operational level are still reflected in Soviet doctrine today.

One of the best examples of Tukhachevskii's theories is found in the study of Operation Bagration, the Belorussian Offensive in June through August of 1944. By the spring of 1944 the Soviets had won the great battles of Moscow,

Stalingrad, Leningrad and Kursk, the Wehrmacht was reeling on the defensive, and the Red Army was preparing for the summer offensive. The objective of Operation Bagration was the reduction of a major salient in the lines, the liberation of Belorussia (or White Russia), and the destruction of the German Army Group Center in its positions along the Dneiper River to the east of Minsk. (21:179) The campaign is significant because the area used by four Soviet Fronts approximates that of a modern Soviet Theater Strategic Operation; it required operational movement of artillery; and it employed what would later be known as Operational Maneuver Groups (OMGs) to depth. (18:57)

The campaign plan called for the First and Third Belorussian Fronts to execute a double envelopment to surround the German Fourth Army and seize Minsk. (See Appendix 1.) The Second Belorussian Front was to apply frontal pressure, while the First Baltic Front was to advance to the northwest to protect the flank. (13:26-27) To support the operation the Soviets amassed five air armies (5,327 aircraft plus 700 bombers from the Long Range Bomber Force), 1,355 self-propelled guns, and 33,000 guns and mortars. (22:21)

The artillery, much of it from High Command Reserves, was concentrated on narrow sectors. Eighty to ninety per cent of the artillery covered eleven to twenty per cent of the line. (18:50) The First Belorussian Front, spearheading

the main attack, averaged 2.5 to 3.5 times as much artillery as the other three fronts. This produced a density of 210-225 guns and mortars per kilometer on the major breakthrough axis. (13:27-28)

This massive artillery support from higher headquarters (over 13 artillery and rocket launcher divisions) was organized differently across the four fronts. (18:27) Additional groupings were formed with specific missions such as counter-battery, destruction, or breakthrough support. These groupings and functions were planned at front or army level, and their operational level fires were planned accordingly. (13:29) The initial preparation varied from one front to another, but averaged a little over two hours. It started with 15 minutes of fire on tactical defensive positions to a depth of three kilometers. This was followed by 90 minutes of additional fires on artillery and heavy weapons positions further to the rear and 20 minutes of operational fires on deeper targets. (23:67-68) This well planned, high concentration of fires had a crushing effect on the defense.

Once the rupture was made, breakthrough operations began. The artillery support for one deep penetration in the First Belorussian Front area consisted of four Breakthrough Artillery Corps (AKPs). (18:62) These AKP's, each consisting of about 1000 cannons and rocket launchers, were part of the artillery reserve of the Supreme High

Command and were provided to influence operational maneuver. (18:50) While they conducted highly effective counter preparation fires, "the prime purpose of these concentrations of artillery was to break through the German lines." (18:51) Between 5 and 13 July 1944, using railroads and the primitive road network, the maneuver covered between 600 and 650 kilometers into enemy occupied territory.(18:62)

There was also close cooperation with the air armies, which "were (and are) regarded simply as long-range artillery." (18:58) Following a different philosophy than the US, the Soviets assigned an air army to each front commander--the 3rd Air Army to the 1st Baltic Front, the 1st Air Army to the 3rd Belorussian, the 4th Air Army to the 2nd Belorussian, and the 16th Air Army to the 1st Belorussian. (24:158) After 17 July 1944, the 6th Air Army was also assigned to the 1st Belorussian Front for additional support. (25:235) Like the artillery, ground support aircraft were massed to support the breakthrough sectors. Following the initial rupture of enemy lines, 75 per cent of available aircraft were ordered to support tank forces or cavalry-mechanized groups. Fighter and ground attack divisions were dedicated to close support, while remaining aircraft were used to engage targets at operational depth. (13:36)

Operation Bagration was not only an example of operational fires, it is thought by many to be a blueprint

for Red Army operations today. The Soviets, in keeping with the conceptual teachings of Tukhachevskii, began to think and plan at the operational level even before the war began. This included building artillery reserves at the operational (front) level "in concentrations to break through the German lines." (18:31) By the end of the War 35 per cent of all artillery was centralized at front level, and large artillery organizations--divisions and breakthrough artillery corps--were available for the operational commander to influence his campaign. (18:50) The early development of "norms" to standardize the delivery of fire was a big step toward standardized fire planning. The effects of this centralization were evident during Operation Bagration.

The fires provided by dedicated air forces and artillery broke massive holes in the German lines allowing maneuver to great depths. Subsequently, air support and accompanying artillery interdicted reinforcing German formations that were making an effort to enter the battle. Fires were planned at the highest levels; assets were provided by higher headquarters to support both tactical and operational maneuver; and accompanying, highly mobile artillery groups were developed to influence deep operations. Operation Bagration provides numerous lessons on firepower that have carried over into modern Soviet operational art.

There are many other examples of operational fires to support the definition in Chapter II. The Soviet use of fires at Belgorod in August 1943 (26:1-4) or along the Vistula-Oder River line in early 1945 (18:65-68) were examples of firepower's ability to facilitate maneuver. Operation Strangle (and its successor, Operation Diadem), conducted in Italy in 1944, was an illustration of air delivered interdiction fires affecting the operational maneuver of General Mark Clark's Fifth Army. (27:8) A later "Strangle" in 1951 Korea was designed to do the same, but because it was not well coordinated with maneuver, it had little operational effect. In October 1942 Field Marshal Montgomery used bomber strikes and massive artillery fires to destroy Rommel's communications nets across the 31-mile front at El Alamein. This exemplifies the use of operational fires to destroy a critical function. The Afrika Corps was never able to regroup and the British campaign was a success. (28:57-58)

Operations Cobra and Bagration, and the other examples above, are evidence of the historical application of operational fires. The fires, provided by artillery and aircraft, decisively impacted on campaigns by facilitating maneuver, interdicting uncommitted forces, and destroying critical functions. If it was true in the past, it could be so again. The next chapter will examine how U.S. forces are prepared to conduct operational fires today.

CHAPTER IV

US OPERATIONAL FIRES: THE PRESENT

In addition to validating the definition for operational fires, the historical examples presented in Chapter III illustrate that fires have played an important part in the successful execution of major campaign plans. There is no reason to think they won't do so again. Our current AirLand Battle doctrine places great weight on striking deep to disrupt the enemy's operational plans. These efforts are designed to isolate the current battle and shape where and when future battles will be fought. To accomplish these deep operations the doctrine emphasizes the use of "interdiction (by ground or air forces...)" (1:20). Such emphasis in doctrine, coupled with historical examples of the value of firepower, should convince military professionals of the importance of operational fires. Are we really prepared to plan and coordinate these fires today?

Army Organizations.

To answer that question one needs to look at Army organizations charged with war fighting at the operational level--the corps, field army, army group, and theater army. By studying the organizations' approach to orchestrating the fires of ground and air forces we can determine how well prepared the Army is to plan and coordinate fires.

Corps.

The corps is the Army's largest tactical formation and is the unit the army group or field army uses to conduct operational maneuver. It is designed to plan and conduct major operations and battles, and contains all the combat, combat support (CS), and combat service support (CSS) needed to fight. It may fight as part of a larger land force in a theater, in which case it is primarily concerned with winning tactical battles, or it may serve as an independent land force and have greater operational responsibilities. (29:1-1)

The corps, then, can conduct operations that are tactical, tactical and operational, or purely operational. (7:66) For example, the current procedures manual for conducting J-SAK says the corps' orientation is on the operational level, but it "conduct(s) campaigns and battles..." (30:4-1) Because it operates at the tactical level when directing the battles of its subordinate divisions and at the operational level as it takes part in the planning of major campaigns, the corps is at the central point on the modern battlefield.

Field Army.

When a corps is located in a large, well-developed theater it will normally be a component of a larger ground force. Today, corps are components of a NATO army group, but in World War II the US formed field armies to control

the activities of two or more US corps and the organizational doctrine exists to do so again if necessary. (31:1-1)

The field army is formed by the theater commander and is responsible for the operational and tactical direction of several corps. The theater commander may choose to form this additional echelon of command to reduce his span of control, to ease the difficulties imposed by a large geographical area or varied threats, or because political considerations require a US counterpart to an allied headquarters. (31:5-1) As subordinate to an army group, the field army is the primary unit of operational maneuver and translates theater campaign plans into missions for the corps. When acting independently in a theater, it will participate in the planning of the theater campaign plan and its commander may act as the land component commander (LCC). It can establish priorities for combat service support, but normally is not involved in management of that support. (31:5-3)

Army Group.

The theater commander can, with approval of the Department of the Army and in coordination with the unified or combined commander, form an army group from existing theater assets. (31:4-1) This headquarters will normally control two to five field armies of two or more corps. The army group might be formed for the same reasons as a field

army, but would represent a higher echelon of command. Operations at this level would involve the deployment and maneuver of masses of ground forces over very large areas. It would involve the integration of all services in the theater and its mission would usually be dictated by a directive or order issued by the theater commander. (31:4-2 to 4-3)

The US Army has not employed an army group since World War II. In August, 1944, General Bradley took command of the 12th Army Group composed of the First and Third (Field) Armies. Acting in conjunction with Field Marshal Montgomery's 21st Army Group, Bradley led his command across France and into Germany. By September LTG Jacob Devers' 6th Army Group, composed of US and French forces, had secured beachheads in southern France and were moving to protect Bradley's right flank. The vast size of these operations from World War II give some idea of the scale of warfare conducted by field armies and army groups. Today, the US Fifth and Seventh Corps and the German Second and Third Corps will come under the control of a multinational Central Army Group (CENTAG) in the NATO central region.

Theater Army.

The theater army, the highest level of operational command, is usually the Army service component in a unified command--i.e., US Army Europe (USAREUR) is the Army component of European Command (EUCOM). As the service

component it is charged with accomplishing the operational tasks assigned by the theater commander and has both operational and support responsibilities. (31:3-1) In addition to organizing, training, equipping, maintaining, and logistically sustaining Army forces, the theater army does long-range campaign planning and makes recommendations on the allocation of forces to the theater commander. (31:3-2) Because these are both operationally significant, the theater army's degree of involvement in combat operations or logistics support is dictated by the theater commander. (32:i)

Field Manual 100-15, Corps Operations, and Field Circular 00-16-1, Theater Army, Army Group and Field Army Operations, go into great detail on the organization and function of these large operational echelons. Each has an element identified to coordinate fires in conjunction with operations, and in each case the integration of all fires (ground and air) is the responsibility of a fire support coordinator (FSCOORD). These FSCOORD's have two primary sources for operational fires--field artillery and tactical air support.

Fire Support

Fire support consists of indirect fire weapons, armed aircraft, and other lethal and nonlethal means used to support a battle plan. (5:1-2) While electronic warfare,

naval gunfire, and marine and naval aviation come under this broad definition, I will focus on the delivery of fires by artillery and USAF aircraft. At each of the operational levels of army command discussed, fire support is a major operating system that the commander must synchronize into combat operations.

Field Artillery.

In US Army doctrine the corps is the highest echelon with a dedicated artillery command. The corps artillery commander has two major functions. In addition to commanding the artillery brigades of the corps, he acts as the corps commander's FSCOORD and advises him on the best use of all fires. (29:3-22) At field army, army group, and theater army (referred to as echelons above corps or EAC) there will be a FSCOORD, but no artillery commander. Each echelon will have a fire support "cell" to assist the FSCOORD in advising the commander. These "cells" may have various names--fire support element at corps, section at army, and detachment at army group or theater army--but they each provide a planning and coordination function to allow the FSCOORD to better advise on the employment of all fires. (31:3-28, 4-26, and 5-25)

Field artillery brigades at corps, usually consisting of three to five cannon (155mm or 203mm), Lance missile, or Multiple-Launch Rocket System (MLRS) battalions, are used to augment the organic fires of the subordinate divisions and

separate brigades fighting the corps' close battle. In many instances the majority of this artillery is placed under the control of subordinate divisions in order to reinforce the fires of the division artilleries. Corps, however, may retain direct control of some artillery to influence the total corps battle. These fires can be used to blunt penetrations or create gaps, protect a flank, suppress enemy air defenses, or deliver counterfire. These missions, and the reinforcement of division artilleries, can normally be viewed as tactical fires.

Longer range systems, like surface-to-surface missiles (Lance) and some MLRS, are usually retained at corps to influence deep operations. These may be used for operational fires at the corps level or may be dedicated to higher headquarters. (29:3-23) If retained under corps control, this long-range artillery is the corps commander's most responsive means of delivering operational fires. Unfortunately, the longest range system, Lance, is optimized for nuclear delivery. With a conventional warhead its range is restricted to about 75 kilometers and it lacks the accuracy and lethality to be effective.

At higher echelons there are few, and often no, additional artillery assets available for employment. Long-range missile systems (Pershing, and in some instances, Nike) may be used to fire beyond the corps sector, but most of these systems have either become obsolete, been reserved

for nuclear delivery, or are being phased out of the inventory for political reasons. In most situations the commander at EAC can affect operational artillery fires only by directing subordinate corps artillery units. Because of the limited number of long-range systems, most artillery is used today in support of the tactical battle. This again highlights the role of the corps at the critical juncture between the tactical and operational level. With the exception of a few missile units, there are no artillery organizations above corps. As our Army focused on the tactical level of war after World War II, we developed weapons and designed artillery forces to support the tactical commander. Artillery can influence the opening phase of an operation, but the Army is dependent on the Air Force for the majority of its operational fires.

Tactical Air.

Air Force-delivered fires in support of the Army can be divided into two broad categories--close air support (CAS) and air interdiction (AI). The latter has a major subset, battlefield air interdiction (BAI), which has only recently come into being. While counter air, airlift, and reconnaissance have great influence on the operational level, my focus will be on CAS, AI, and BAI.

Close air support influences ground action by attacking targets "in close proximity to friendly surface forces" and requires "detailed coordination and integration with the

fire and maneuver plans" of the supported force. (33:3-4) While the depth of these attacks has been debated, the key is not distance; but the requirement for detailed coordination to ensure the safety of friendly troops and effect on targets that impact the immediate battle. This is usually thought to be about two to five kilometers, but may vary. (34:67) The requests for CAS may originate at any level of command, but the responsibility for planning and execution of CAS lies with the Air Force element located with the corps headquarters. (35:3-2)

Air interdiction attacks are designed to "delay, disrupt, divert, or destroy an enemy military potential before it can be brought to bear effectively against friendly forces." (33:3-3) These strikes, posing little danger to friendly troops, have traditionally been conducted at depths beyond the corps Fire Support Coordination Line (FSCL). The FSCL, a permissive fire control measure established by the ground commander, allows the expeditious attack of targets beyond the designated line without further coordination. (29:3-6) AirLand Battle doctrine, however, places great emphasis on attacking uncommitted forces at depth to prevent them from impacting on the tactical battle already underway. (36:28) Disrupting the tempo of the enemy's advance throughout the depth of the battlefield is one of the central themes of the new doctrine. (37:6) As early as 1976 corps commanders in NATO recognized the

advantage of striking the second-echelon forces that would soon influence their close battles, and planners at CENTAG and Fourth Allied Tactical Air Force (4ATAF) coined a new term--battlefield air interdiction. (38:62-63) This new concept, initially espoused in NATO Allied Tactical Pamphlet 27(B), was approved by the United States, and later incorporated into USAF doctrine. (33:3-4) BAI attacks are directed against targets having a "near term" effect on friendly forces. They differ from other AI attacks because of their import to the ground commander and the emphasis he places on their identification and attack. Since these attacks may fall on either side of the FSCL, Air Force doctrine is clear that joint coordination is required during planning. The execution of BAI, however, is controlled entirely by the air commander as part of his overall air campaign. (33:3-4)

CAS, BAI, and AI are not easily divided into the categories of tactical or operational fires. Because there are no set distances at which these air missions apply, and because the depth of fire is not the only criteria for determining if it has operational impact, it is generally accepted that the three overlap. If the missions are placed on a continuum, CAS falls toward the tactical end, AI toward the operational, and BAI is somewhere in the middle, overlapping each of the others. When addressing operational

fires it becomes necessary to consider the integration of all three types of missions.

Tactical Air Control System

While the FSCOORD is charged by the commander at each echelon with the responsibility for coordinating all fire support agencies, it is obvious that this can occur only with the cooperation of each agency. Since the primary provider of operational fires is the Air Force, it is only logical that they be deeply involved in developing a system for ensuring their fires are available and integrated into the campaign plan. To plan and execute these fires, the Air Force has developed a Tactical Air Control System (TACS) to integrate at all levels, and provide the link between air and land components. (See Appendix 2.)

Within this system the Air Support Operations Center (ASOC), located near each corps Tactical Operations Center (CTOC), does the planning necessary to ensure CAS is well integrated with the ground maneuver plan. Here, requests from subordinate tactical organizations are evaluated and the corps commander, with advice from his FSCOORD and the ASOC, decides how he will employ his allocated CAS sorties.

The senior air operations element in the TACS, the Tactical Air Control Center (TACC), works under the direct control of the Air Force component commander in the theater. It is responsible for coordinating all levels of air support

in the theater, and provides the link between the air and land component commanders at the highest level. It is here that all AI (and BAI) is planned and controlled. The land component commander (LCC), who could be the theater army, army group, field army or corps commander, is responsible for establishing a Battlefield Coordination Element (BCE) which is located with the TACC. Through the BCE, the LCC sets his priorities for air support and nominates targets. The BCE exchanges intelligence and operational information with the TACC and ensures air planners are aware of the ground situation. Once this information is provided, the ACC is responsible for conducting the air portion of the campaign.

The two primary nodes for coordinating air-delivered operational fires in a theater are the ASOC and the TACC. Simply put, the former is concerned with the planning and control of CAS at the corps level, while the latter deals with AI and BAI at the theater. Obviously close coordination is needed between the two nodes. This coordination is made more challenging when information must be shard with the tactical air control parties (TACPs) found with each Army tactical echelon from corps through battalion.

Additionally, the TACS has a number of radar elements to ensure airspace control and the direction of airpower engaged in the defensive counter air battle. The Control Reporting Center (CRC) or one of its subordinate Control

Reporting Posts (CRPs) would normally be responsible for assisting aircraft involved in providing air support to ground forces. The CRPs and CRC would help protect aircraft from attack from either friendly or enemy air defenses. The airspace control function directly impacts on the ability of airmen to provide effective fires, and therefore has to be considered when looking at the integration of air support with ground operational maneuver. (17:3)

Summary

After 1945 the Army tended to focus on winning tactical battles, and lost an appreciation for the difficulties of planning and conducting conventional warfare at echelons above corps. It was only in 1984, spurred on by the introduction of AirLand Battle, that the Army began to reexamine doctrine for large forces. While some doctrine has been republished in FC 100-16-1, there still are no deployed US commands above the corps level. In the same time period the Air Force continually refined its tactical air control system to better direct air support for the ground forces. Today, both the Air Force and Army are better prepared to fight at the operational level than in many years, but continuing refinement and the demands of changing technology leave room for improvement.

CHAPTER V

US OPERATIONAL FIRES: THE FUTURE

As the historical examples have shown, and our current doctrinal organization reinforces, the US views delivery of operational fires as a joint Army-Air Force endeavor. While fires from the Navy and Marine Corps will certainly be integrated when available, recent history and current trends indicate that the Army will habitually rely more heavily on joint action with the Air Force. The published doctrine now supports the concept that the two services "are all in this together." (39:64) Though the doctrinal support relationships described in this paper are modified from theater to theater, the general functions outlined are followed to enable the commander to deliver operational fires.

Can we do it better in the future? Our current system of providing operational fires has evolved significantly as circumstances have changed since World War II. The move from the TAC's that Ninth Air Force used in France to the TACC's and ASOC's has been an attempt to better capitalize on aviation's speed, range, and flexibility by improving centralized control and decentralized execution. The implementation of BAI was a response to ground commanders' concern for more expeditious attack of Soviet second

echelons. The development of longer range cannons, improved munitions, and the reintroduction of multiple rocket systems were the Army's initial answer to that same threat. Newer, even more effective, systems are in development. The introduction of the BCE was recognition of the need to more closely integrate fires from the two services at the operational level.

This evolution in procedures needs to continue. Technology is causing the battlefield to change dramatically and military professionals are being challenged to keep pace. Both services are developing systems of greater range, accuracy, and lethality. While it is unlikely that Army systems will ever approach the speed and range of the airplane, we continue to look for ways to increase operational mobility. Among other things, this translates into the ability to position artillery more quickly across greater distances in order to provide operational fires. Simultaneously, both services are developing more responsive reconnaissance and surveillance systems to facilitate target acquisition at the operational level. Tying the enhanced targeting capabilities to deadly fire delivery systems will require a command and control network more responsive and more hardened than before. Prior to this "system of systems" coming into being, a decision is necessary on how to integrate new technologies to take the greatest advantage of their capabilities.

In the near term, the emergence of new technology requires the Army and Air Force to reexamine responsibilities for delivering operational fires. The existing missions of CAS, BAI, and AI need to be relooked. The functions are still applicable, but the differences between them is becoming less distinct. Concomitantly, there is a need to analyze the current system of integrating air-delivered fires with the operational commander's maneuver plan. The present TACS may not meet current, much less future, needs.

The "Blurring" of CAS, BAI, and AI.

Three trends in technology have begun to blur the differences between CAS, BAI, and AI. The Air Force is developing multirole aircraft that can survive while flying CAS, but still retain the capability to attack deep interdiction targets; the Army is developing weapons to deliver its own operational fires; and the target acquisition and command and control systems for operational targeting is improving. These trends have developed as the services have attempted to meet the deep attack operational requirements of AirLand Battle doctrine. As the years ahead provide even greater capabilities, CAS, BAI, and AI will become less useful concepts.

Historically the Air Force has delivered close-in fires for friendly troops (CAS) and deeper fires to disrupt,

delay, divert, or destroy the enemy (AI). Because of the weapons available, and the Army's myopic focus on tactics rather than operational art, the ground commander has concentrated on those fires closer to the front line, and abrogated responsibility for deeper fires to the air commander. The addition of BAI to Air Force doctrine expanded the definition of interdiction and tended to bridge a gap between CAS and AI. (33:3-4) While the Air Force is charged to deliver BAI, the ground commander is now involved in selecting the targets. Through the BCE, he nominates and prioritizes BAI targets for attack. (40:A-1)

The emergence of BAI is due in part to paradoxical effects of 20th century technology. The tank and, more recently, the helicopter have increased the speed at which ground maneuver can take place; shrinking the time it takes to move across the battlefield. Concurrently, the commander has increasingly been able to see and engage the enemy at longer ranges; expanding the distance at which he fights. These new systems are beginning to allow us to fight at the increased depth required on the AirLand Battlefield.

The result has been much more than just the ability to attack at greater depth. Because the battlefield has also shrunk, time rather than distance is becoming the primary consideration for targeting. It is already difficult to distinguish between those targets in "close proximity" and those that have "near term" effect on friendly forces.

Today the former are CAS and the latter are BAI, but at the speed of modern ground combat they may be only minutes apart.

In fact, many believe the distinction between CAS and BAI is inconsequential. General Merrill McPeak, in 1985, wrote that BAI is indeed interdiction, not CAS, but observes that there are similarities. He pointed out that since CAS lies inside the FSCL, and BAI straddles it, targets they address are an immediate problem for the ground commander and they require close coordination. (34:68-69) In February 1988 LTG James Brown, Vice Commander of Tactical Air Command, said, "AirLand Battle places increasing emphasis on attacking time-sensitive targets over the full spectrum of the battlefield--so the separation between CAS and BAI has become more indistinct." (41:80)

The similarity between CAS and BAI on the modern battlefield has been part of the argument presented by Air Force senior leadership for the replacement of the aging A-10 with the A(F)-16 as a multirole CAS/BAI aircraft. General Welch, Air Force Chief of Staff, has said that he favors "...pursuing variants of the F-16 for close air support and battlefield interdiction." (41:78) The Air Force believes the requirements for CAS are similar to those needed for the BAI mission, and indeed they are. As the battlefield has shrunk, the ground commander's interest in BAI has increased. He not only will call in CAS in support

of troops along the Forward Line of Own Troops (FLOT), but as he can detect them, he'll attack the enemy further to the rear. The difference between CAS three kilometers away on "this side of the ridge" and BAI six kilometers away on "the other side of the ridge" has become negligible.

This same argument can be carried to even greater depth. If BAI is a subset of AI, the two categories obviously overlap. Historically, AI has encompassed the attack of enemy forces and attack of the transportation infrastructure that brought those forces to the battle. Unlike CAS, AI did not have an "immediate" effect. There was a time lag. BAI was introduced to attack those AI targets that were time-sensitive and did affect the immediate battle. (34:69-70) With the Air Force's multirole aircraft, there is little difference in the attack of a BAI or AI target. USAF General (RET.) Charles Donnelly writes "...at what point will we need to use deep attack aircraft for air interdiction of follow-on-forces, and at what point will we need to use the same aircraft to attack airfields or ports?" (42:7) As the Air Force develops aircraft that can be used for CAS, BAI, or AI, and the ground commander's success comes to depend on attacking both close-in and deep targets, the true distinction between these three missions will become less significant.

While many senior leaders in the Air Force have seen similarities in the requirements for aircraft to attack

targets close, deep, or in-between, the Army has been working to increase its ability to deliver its own operational fires. Their efforts have been directed down three avenues--increased range for artillery, increased mobility for ground systems, and increased use of rotary wing aircraft. Field artillery can influence actions at operational depth only if it can reach them. The Chief of Field Artillery, MG Raphael Hallada, has listed improved mobility, range, and responsiveness, coupled with reduced manpower, as part of the Field Artillery's master plan for the future. (43:12) The Army's new tactical missile system, (ATACMS), will provide the operational commander with a semiballistic, single-stage, solid-propellant missile that will range 200 or more kilometers with improved accuracy and lethality over current nonnuclear weapons. (44:46-49) The new missile is desperately needed. Even our most currently fielded systems, the MLRS and M198, 155mm howitzer, can only reach out 30 kilometers. The Lance missile can deliver nuclear and conventional fires out 75-110 kilometers, but the system is aged, inaccurate, and we have too few of them. Our last truly operational level artillery, the Pershing II missile, is being phased out of the inventory as part of the Intermediate-range Nuclear Forces (INF) treaty.

While ATACMS' range and accuracy will give the operational commander a longer reach, it is not enough. The Army has looked for ways to have artillery accompany

operational maneuver forces to depth. The M109 howitzer improvement program (HIP) and the helicopter will give the commander that capability. Based on the proven, but venerable, M109, 155mm howitzer, the HIP has increased mobility and range and on-board inertial navigation, communications, and fire control that allow each howitzer to move quickly, often, and semiautonomously to support maneuver forces during deep operations. (45:24-26) Advances in Army aviation already give the commander a greater reach. Recent focus has been on the use of helicopter units as maneuver forces, but the senior leadership at the Army Aviation School continues to emphasize the importance of aviation in the combat support and combat service support roles. (46:6) The new AH-64 advanced attack helicopter, UH-60 utility helicopter, and OH-58D observation aircraft, coupled with a new aviation brigade organization at division and corps, and doctrine designed to guide cross-FLOT operations, show the emphasis the Army has placed on fielding rotary-winged maneuver and firepower. The even more advanced light helicopter, experimental (LHX) designed for armed reconnaissance, light attack, and air-to-air combat has a projected initial operational capability (IOC) in 1996. (47:341-342)

As the ground commander gains the ability to deliver operational fires with organic assets, he will begin to attack targets that have been "reserved" for BAI or AI.

There can be no clearly defined line where ground and air fires are separated. Though field artillery and Army aviation are giving the commander the ability to use operational fires, they have little value without improved target acquisition.

Improvements in the ability to see deep is the third trend which is blurring the historical differences between CAS, BAI, and AI. An attack at operational depth puts heavy demands on gathering intelligence of the enemy and developing targeting information in a timely manner. Today the Army can do some deep target acquisition with special operations forces inserted in the enemy's rear or airborne electronic intelligence platforms like Quicklook or Guardrail, but the ground commander depends on the Air Force to provide most targeting information at depth. A variety of aircraft like the SR-71, U-2R, TR-1, RF-4C, and RC-135 can provide either imagery or electronic intelligence, but we need better downlinks and faster interpretation of the raw data in order to expedite target production.

As artillery units develop the capability to fire deeper and more accurately, the demands for target acquisition will only increase. Fortunately, improvements are being made. The Army and Air Force are hard at work developing the Joint Surveillance Target Attack Radar System (JSTARS) to detect, track, and control the attack of deep targets. This airborne platform is designed to include a

moving target indicator (MTI) radar and a synthetic aperture radar (SAR) for locating both moving and stationary targets far to the enemy's rear. Packed with data processors and communications equipment, JSTARS will be able to track targets up to 320 kilometers away, process information and pass it to ground stations for attack. JSTARS is intended to do for the ground battle what the Airborne Warning and Control System (AWACS) has done for the air battle. (48:25-26)

Both services are working on fusion systems to receive, sort, and transfer target data to the air and ground commanders in near real time. The Air Force's Enemy Situation Correlation Element (ENSCE) and the Army's All Source Analysis System (ASAS) will provide targets for attack by airpower or ATACMS. (39:62) The USAF's Ground Attack Control Center (GACC), an emerging concept, is an attempt to improve the "attack against selected time-sensitive ground targets." (49:5) Constant improvements like Mobile Subscriber Equipment (MSE), Single-Channel Ground and Airborne Radio System (SINCGARS), and the Army Tactical Command and Control System (ATCCS) will ensure the target information reaches firing units in a timely manner.

As target acquisition for the deep battle improves and the ground commander receives weapons to influence the battle 200-300 kilometers to his front, he becomes an active

player at operational depth. In the past, the ground commander might show an interest in the very deep battle, but it was pretty much an Air Force domain. However, once the ground commander has a target acquisition system, a command and control system, and weapon systems that allow him to attack targets at operational depth, the distinction between the close-in and deep battle will dim. Just as the ground commander has always been an involved participant in CAS and its effect on the close-in battle, he will now desire to play a more active role at the depths traditionally allocated to BAI and AI. As the ground commander acquires assets to employ deep and affect his own destiny, there will be requirements for joint coordination for BAI and AI that are similar to those already in place for CAS.

The new systems described here--whether they be A-16's, ATACMS, or JSTARS--aren't available yet, but they are not far away. There are many examples in history of wasted opportunities because military decision makers were not prepared to exploit new technologies when they became available. (50:13) When new systems do arrive, the ground commander must be prepared for them. He will soon have the ability to execute operational fires, and it will require an increased level of joint coordination. We will no longer have the luxury of dividing CAS, BAI, and AI into neat zones. Instead, they will fall on a continuum, and where we

attack will be a factor of threat disposition, speed of closure, air defense capabilities, and friendly force posture. As the distinction between the three missions blur, and the requirement for continuous, joint coordination becomes similar for each of them, it will be necessary to analyze the current system of integrating air and ground fires.

Summary

Since the publication of FM 100-5 the Army and Air Force have worked hard to apply technology to meet the demands of AirLand Battle doctrine. In order to deliver operational fires we have begun to see weapons with increased range, lethality, and mobility; improved reconnaissance and surveillance systems; and command, control, and communications systems capable of transferring data and managing fires at great depth. Just as the new doctrine is providing a conceptual base for technology, it is also providing the stimulus to reexamine current Army and Air Force roles on the AirLand Battlefield. The integration of air- and ground-delivered fires is becoming more difficult and deserves close study.

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

The current Tactical Air Control System is not well prepared to accommodate the blurring between CAS, BAI, and AI. As outlined in Chapter IV, the ASOC is responsible for the planning and control of CAS, while the TACC does the same for BAI and AI. The TACC is located at theater level with the air component commander, while an ASOC is located with each corps. If intervening levels of Army command were to exist, they would have a air liaison element to coordinate with the TACC. (Allied Tactical Operations Centers (ATOCs) coordinate at army group level in NATO, but will not be discussed here.)

This classical TACS, then, divides the planning and control of CAS, BAI, and AI between two levels. The location of the ASOC with the corps recognizes the requirement for close and detailed coordination with the ground commander. The BCE, provides the same coordination at a higher level, but the system separates the corps commander in time and distance from the agency that has the greatest impact on the planning of BAI and AI.

Unity of command, one of the principles of war, and unity of effort, an imperative of AirLand Battle, dictate that a commander have the capability to focus all his combat

power to influence the outcome of his campaign. (1:23,175) As new technologies are fielded, the present TACS will degrade, rather than enhance, the efforts of the corps commander. (7:67) The presence of two command and control nodes--the ASOC and TACC--planning and controlling air support for the ground commander stretches the principle of unity of command today, and becomes even more difficult to accept in the future.

Consider the following. Despite the doctrine which provides for echelons above corps, the corps is the largest US Army formation fielded today. When the JSTARS ground stations and ATACMS are fielded and linked to ASAS, it will be at the corps level. Higher combined levels may put combat restrictions on firing ATACMS, but the weapon system will almost certainly be under the corps commander's control. (43:12) Similarly, intelligence systems tend to be under unilateral national direction. Products may be shared with combined alliances, but JSTARS is designed to support a corps-sized element. (48:27)

It can be concluded, that when the ground commander possesses long-range surface-to-surface systems and has access to adequate target acquisition data, he will insist on influencing the battle with operational interdiction fires. Today that corps commander's FSE and ASOC are only prepared to coordinate close-in fires (CAS). Coordinating operational fires through the BCE at the TACC presents

several problems. The separation of the CTOC and the TACC/BCE in time and space will degrade timely response, and the TACC's requirement to coordinate with three or four ASOC's may stretch their span of control beyond its capability. In 1986, one corps commander, while singing the praises of the BCE and TACC organization, pointed out that communications and automation problems prevented the BCE from transferring information quickly to Army units. (51:6)

One solution to this problem of fragmented authority is to plan and control all air support missions that impact on the corps within the ASOC. (52:52-53) By consolidating authority at one place, responsiveness and complete integration of assets could be accomplished at one level. There is some precedent for this approach.

There are historical parallels if the corps of today, our largest formation, is compared to the field army of 1944. The TAC that supported an army in the 12th Army Group during Operation Cobra controlled 4-6 fighter bomber groups and a reconnaissance group that flew CAS, armed reconnaissance, and interdiction close to friendly troops. (17:12) In today's corps the ASOC and FSE could coordinate air and surface fires, providing one node for ensuring operational fires were integrated into the corps campaign plan. The area of responsibility for this coordination would extend to the limit of the corps zone, and would

include all fires to include those covered today as CAS, BAI, and AI.

Furthermore, if higher level commands did exist, similar cells could be employed. The TACC would still plan and control AI beyond the corps zone and would coordinate for surface fires with the Army element controlling artillery fires that will reach to that depth.

This approach will be criticized by some as placing air support under the control of a corps commander. That, of course, is an anathema to US Air Force doctrinaires, but the aircraft need not be placed under the command of a ground commander. Sorties, from multirole aircraft, can be allocated to the corps much as they are today, but with the understanding they may be used at much greater depth in the corps zone. Within his area of operation, the corps commander could then integrate all his assets--helicopters, fast-moving HIP howitzers, ATACMS, and airpower--to provide tactical and operational fires. Depending on the threat and the state of his own forces, a likely scenario would see helicopters and field artillery performing "CAS" missions, while ATACMS and allocated aircraft are interdicting at operational depth. In other circumstances, the aircraft and helicopters may be used in "close proximity" while ATACMS is used for interdiction. There are numerous scenarios, but the key is maximum flexibility and unity of effort of all systems attecting the operation.

Implementing the approach outlined here would require considerable study. Because the subject of this paper is fires, I have not discussed the role of other tactical air missions like counter air, airlift, or reconnaissance. Some critics of this paper will feel the system described here destroys the principle of centralized control of air power advocated in doctrine, and it certainly will require a reexamination of apportionment and allocation. Additionally, much of the detailed planning, or "packaging", presently done at the TACC for deep air strikes might have to be done at a lower level. The air component commander, however, can still retain centralized control of his forces, distributing them to the corps as he recommends and the theater commander deems necessary. The collocation with the maneuver unit of a single air coordination center, charged with the responsibility of planning and controlling all air support to the corps, will allow <u>all</u> operational fires to be integrated with the commander's maneuver plan.

Our current joint system of delivering operational fires has evolved since World War II, but it will require even faster evolution as the surge of technology continues to rush forward. Doctrinal missions will become indistinct as the ground commander gains greater capabilities and the air commander acquires multirole aircraft capable of performing equally well up close or at depth. We need to reexamine our current approach for delivering operational

fires to see if it is still valid, and develop new control systems to exploit technology to its fullest.

CHAPTER VII

SUMMARY

This paper has attempted to point out two broad areas requiring additional study. First, there is not a clear definition of operational fires. Army and Air Force writers need to reach an understanding on this term, and formally add it to existing doctrine. Additionally, as technology continues to provide new capabilities, the current system for coordinating air- and ground-delivered operational fires needs review.

AirLand Battle Doctrine identifies firepower as one of four elements of combat power; but neither the capstone manual, nor existing supporting manuals, clearly define operational fires. The definition presented in this paper relies heavily on the principles expressed in FM 100-5 and the discussion of operational fires from an unpublished manual for large unit operations. (FM 100-6, Coordinating Draft) Chapter II of this paper defines operational fires, attempts to establish a distinction between operational and tactical fires, and outlines the effect operational fires should have on the total campaign. Others need to continue the effort to add the term to existing doctrinal literature.

The analysis of fires during Operations Cobra and Bagration add a historical validity to the definition. By

looking at both US and Soviet operations during World War II it is easy to see the different roles played by ground- and air-delivered operational fires and the manner in which they were controlled. The massive amount of Soviet artillery, often held in reserve at the operational level, and the subordination of airpower to the ground commander were not reflected in US operations. The relatively lesser amounts of artillery and the highly successful integration of fires by coequal air and land components during Operation Cobra set the stage for the evolution of a tactical air control system that is still in place today.

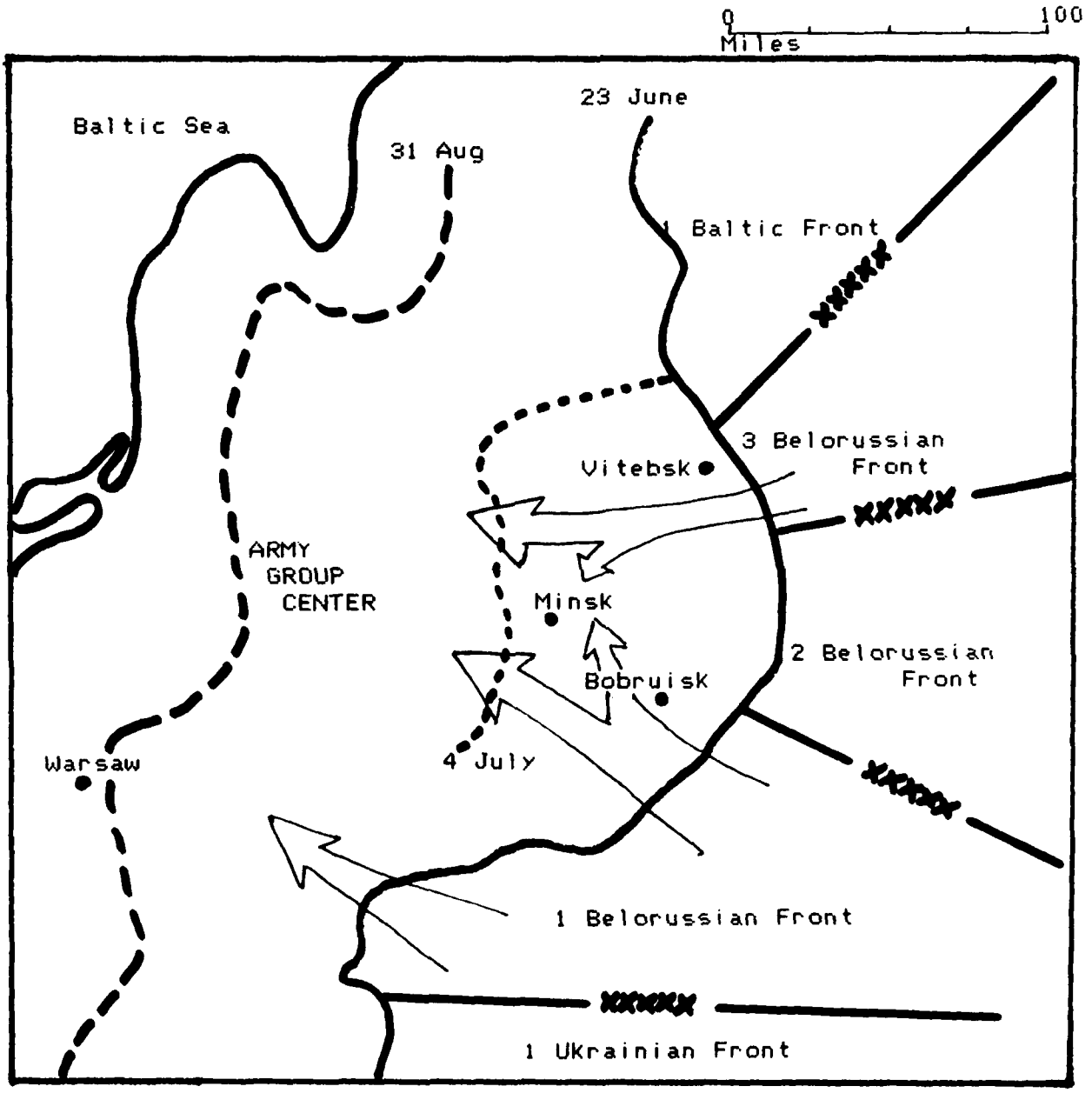
Our current control system must be prepared to work with Army formations at EAC, but unfortunately, those US echelons exist only in the doctrinal manuals. Consequently, the TACS has been modified from theater to theater to meet the demands of US and allied field commanders. Functions performed are similar to those postulated in doctrine, but the organization and names of planning and control cells vary, and in some theaters additional nodes have been added.

Furthermore, technology has begun to affect traditional relationships upon which the TACS is based. AirLand Battle doctrine, and the resultant weapons systems that are being developed to fight it, are tending to blur the distinctions that the US has used to organize its operational fires. Helicopters and howitzers with improved munitions can maneuver farther and faster to be positioned to deliver

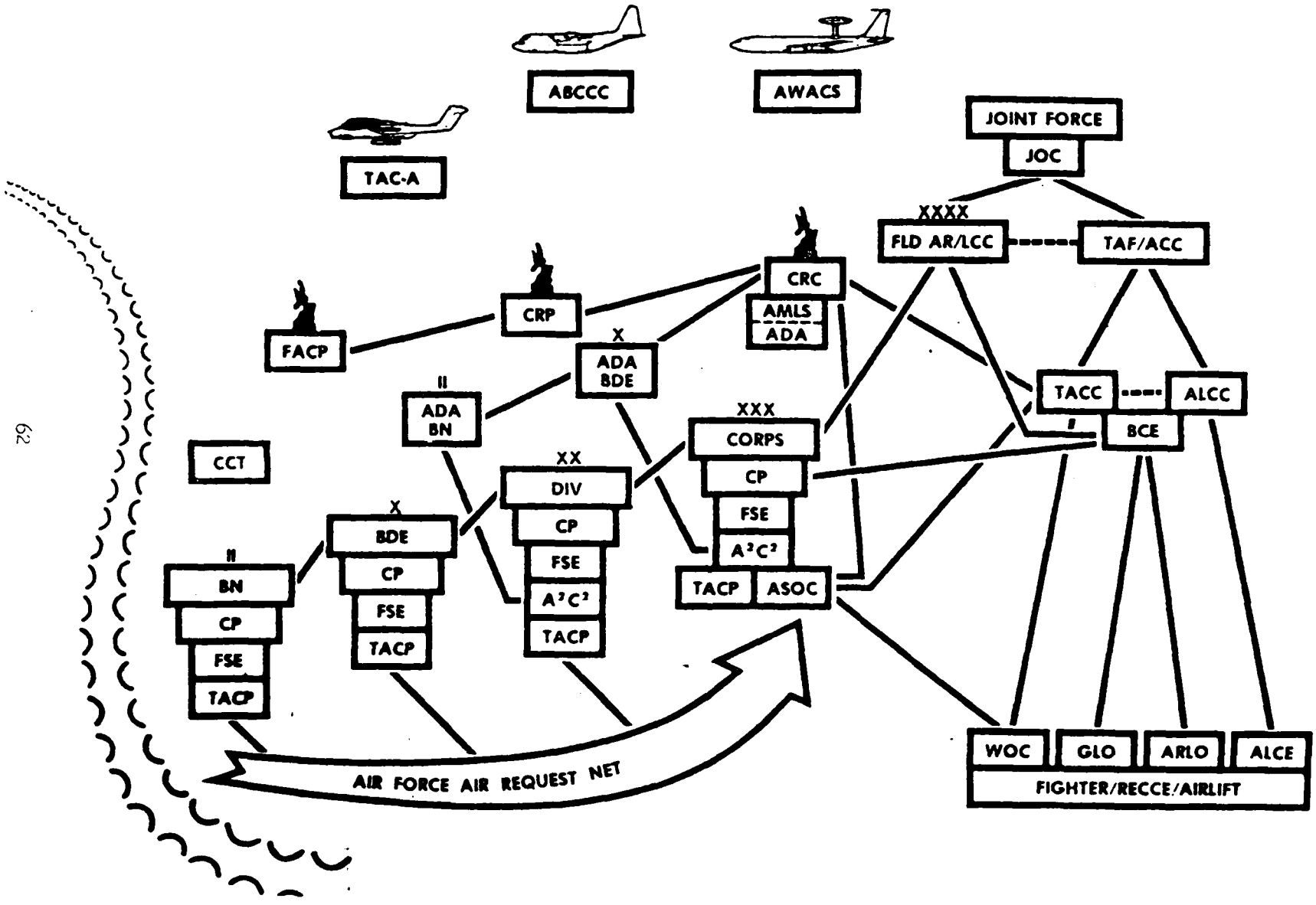
operational fires; ATACMS and JSTARS will give the corps commander the ability to interdict at great depth; and improved multirole aircraft give the air commander the capability to attack close or deep with greater flexibility. As the effects of technology shrink the battlefield and expand the horizons of the commander, tactical missions like CAS, BAI, and AI need to be reexamined. As Chapter VI concludes, the current TACS requires renewed study to ensure unity of command and effort. For too long we have adjusted and adapted the doctrinal control system to ensure it works in a given theater. Before the new technologies are in place, and soldiers and airmen in the field are forced to build their own system, the services need to develop a joint approach to exploit the technology and ensure responsive fires to the operational commander.

Since the introduction of AirLand Battle doctrine, operational fires have not received the same amount of attention in the Army as operational maneuver. Perhaps this is because there is a tendency to equate firepower with attrition warfare, rather than viewing it as a component of maneuver warfare; or perhaps it's because, in the US experience, operational fires have been delivered primarily by the Air Force. Whatever the reason, it is time for new attention. Operational fires have a significant part to play in our maneuver-oriented doctrine, and it is time we study its application in greater depth.

OPERATION BAGRATION
JUNE - AUGUST 1944



Appendix 1: The Belorussian Campaign



Appendix 2: The Tactical Air Control System

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GLOSSARY

AAGS	Army Air Ground System
ABCCC	Airborne Battlefield Command and Control Center
A2C2	Army Airspace Command and Control
ACC	Air Component Commander
ADA	Air Defense Artillery
ADA BDE	Air Defense Artillery Brigade
ADA BN	Air Defense Artillery Battalion
AI	Air Interdiction
AKP	Breakthrough Artillery Group (Russian)
ALCC	Airlift Control Center
ALCE	Airlift Control Element
ALO	Air Liaison Officer
AMLS	Airspace Management Liaison Section
ARLO	Air Reconnaissance Liaison Officer
ASAS	All Source Analysis System
ASOC	Air Support Operations Center
ATACMS	Army Tactical Missile System
ATCCS	Army Tactical Command and Control System
AWACS	Airborne Warning and Control System
ATOC	Allied Tactical Command and Control System
BAI	Battlefield Air Interdiction
BCE	Battlefield Coordination Element
BDE	Brigade
BN	Battalion
CAS	Close Air Support
CCT	Combat Control Team
CENTAG	Central Army Group
CP	Command Post
CRC	Control and Reporting Center
CRP	Control and Reporting Post
CS	Combat Support
CSS	Combat Service Support
CTOC	Corps Tactical Operations Center
DIV	Division
EAC	Echelons Above Corps
EC	Electronic Combat
ENSCE	Enemy Situation Correlation Element
EUCOM	European Command
FAC	Forward Air Controller
FACP	Forward Air Control Post
FC	Field Circular

FLD AR	Field Army
FLOT	Forward Line of Own Troops
FM	Field Manual
4ATAF	Fourth Allied Tactical Air Force
FSCL	Fire Support Coordination Line
FSCOORD	Fire Support Coordinator
FSE	Fire Support Element
FSO	Fire Support Officer
GACC	Ground Attack Control Center
GLO	Ground Liaison Officer
HIP	Howitzer Improvement Program
IOC	Initial Operational Capability
INF	Intermediate-range Nuclear Forces
JF	Joint Force
JOC	Joint Operations Center
J-SAK	Joint Attack of the Second Echelon
J-SEAD	Joint Suppression of Enemy Air Defense
JSTARS	Joint Surveillance Target Attack Radar System
LCC	Land Component Commander
LHX	Light Helicopter, Experimental
MLRS	Multiple-Launch Rocket System
MSE	Mobile Subscriber Equipment
MTI	Moving Target Indicator
OMG	Operational Maneuver Group
RECCE	Reconnaissance
SAR	Synthetic Aperture Radar
SINCGARS	Single-Channel Ground and Airborne Radio System
TAC	Tactical Air Command
TAC-A	Tactical Air Coordinator-Airborne
TACC	Tactical Air Control Center
TACP	Tactical Air Control Party
TACS	Tactical Air Control System
TAF	Tactical Air Force
TAR	Tactical Air Reconnaissance
USAREUR	United States Army Europe
WOC	Wing Operations Center